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**United States Patent** [19]**Sugano**[11] **Patent Number:** **5,457,454**[45] **Date of Patent:** **Oct. 10, 1995**[54] **INPUT DEVICE UTILIZING VIRTUAL KEYBOARD**[75] Inventor: **Jin Sugano**, Kawasaki, Japan[73] Assignee: **Fujitsu Limited**, Kawasaki, Japan[21] Appl. No.: **123,996**[22] Filed: **Sep. 21, 1993**[30] **Foreign Application Priority Data**

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[51] **Int. Cl.<sup>6</sup>** ..... **G06F 3/02; G06F 3/03**[52] **U.S. Cl.** ..... **341/22; 341/26; 345/179**[58] **Field of Search** ..... **341/22, 23, 26, 341/28; 345/179-183; 364/709.16, 709.15**[56] **References Cited****U.S. PATENT DOCUMENTS**

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An input device, which utilizes a virtual keyboard, includes a device for designating at least one input-position in a virtual keyboard displayed on a display; an input-symbol defining device for defining a form and a meaning of each input-symbol drawn by the designating means (e.g., a write-pen); and a symbol recognition device for discriminating the input-position and related input-symbol drawn at the input-position on the basis of information defined by the input-symbol defining means. The input device generates a specified input-code in a real keyboard in accordance with a combination of the input-position and the input-symbol, and displays characters or symbols corresponding to the input-code on the display means. Preferably, the form of each input-symbol includes a length of a segment drawn by the designating device and a direction in which the segment extends. Further, the meaning of each input-symbol includes information about a correspondence between the form of each input-symbol and a method in which at least one key in the real keyboard is depressed.

**18 Claims, 8 Drawing Sheets**